

The Far-Reaching Applications of the U.S. Environmental Protection Agency's Collaborative Pesticide Method Development Projects

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As directed by the Food Quality Protection Act (FQPA), the U.S. Environmental Protection Agency (U.S. EPA) has the mission of reassessing all food and feed tolerances. In support of this mission, the U.S. PA is developing new analytical methods for different classes of pesticides. These new analytical methods will lead to the acquisition of pesticide residue data that will help further the understanding of the toxicological significance of pesticides.

A recent ACL project, in collaboration with the FDA, resulted in the development of a low-level multiresidue method (MRM) for carbamate residues in wheat, fruits, and vegetables using both state-of-the-art equipment and recent advancements in sample cleanup technology. This analytical method allows for the sub part-per-billion (ppb) quantitation of parent carbamates, their metabolites, and piperonyl butoxide, a pyrethroid synergist. Prior to this method, Federal and State laboratories often relied upon a dated method for carbamate analyses with a limitation of 10 ppb. The improved carbamate MRM has lowered the quantitation limits of the *N*-methyl carbamates to less than 1 ppb.

The new method has been published by the FDA as Laboratory Information Bulletin (LIB) No. 4312, *A Multi-residue Method (MRM) for N-Methyl Carbamates and Metabolite Pesticide Residues at the PPB Level in Selected Representative Commodities of Fruit and Vegetable Crop Groups*. This updated method has recently been used by the FDA Total Diet Laboratory; and, to date, there have been several international requests for this carbamate method. In addition, valuable knowledge gained from the carbamate MRM project has been used to analyze Dosing Solution samples in support of an ongoing Office of Research and Development (ORD) toxicity study of the National Health and Environmental Effects Research Laboratory (NHEERL) at Research Triangle Park.